NONPROVISIONAL APPLICATION FOR LETTERS PATENT
UNITED STATES OF AMERICA

Be it known that I, **C. ALLEN BROWN,** residing at **8 Running Fox, 1600 U.S. Highway 64 W. 223, Sapphire, North Carolina 28774,** a citizen of the United States, have invented certain new and useful improvements in a

MEASURING APPARATUS AND METHOD THEREFOR

of which the following is a specification.

INVENTOR'S REPRESENTATIVE

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MEASURING APPARATUS AND METHOD THEREFOR

TECHNICAL FIELD

The present invention relates generally to tools, and more specifically to a tool for measuring linear distances, wherein the present invention facilitates the process of laying out framing and trim components in view of conventional methods requiring a tape measurer or ruler.

BACKGROUND OF THE INVENTION

In the construction industry, proper frame construction depends in large part on regular and uniform spacing of studs, joists, rafters and trusses at standard intervals. As such, it is frequently necessary to measure fixed/predetermined intervals or repetitive distances to ensure proper placement of building components along a workpiece.

Traditional measuring devices include calibrated sticks, such as rulers, yardsticks or folding rulers, or flexible measuring devices, such as tape measures or steel tapes. Although calibrated sticks are useful and accurate, such devices are inconvenient to transport and often cumbersome to operate, as the fixed length of such devices require multiple sticks to be laid end-to-end to measure relatively lengthy distances and/or a single stick to be laid out multiple times. For the most part, problems associated with calibrated sticks are often solved by utilizing tape measures and/or other flexible measuring devices. Despite the recognized advantages of such flexible measuring devices, the process of laying out a tape measure along a workpiece and marking the workpiece at predetermined intervals can be a tedious and time-consuming process. Moreover, tape measures typically contain a spring-return feature that makes release of the tape difficult, and often makes layout of the tape cumbersome and even dangerous through unexpected flyback or spring-return of the tape. Furthermore, if the tape cannot be secured to one end of the workpiece, two hands must be utilized to hold the tape, thus making it extremely

difficult to measure and mark distances, especially when working off scaffolding, ladders or roofs.

Therefore, it is readily apparent that there is a need for a versatile measuring device that can be easily and quickly utilized to accurately measure linear distances. With regard to frame construction, there is also a need for such a device that provides straight edges and gauging blocks for measuring sizes and angles most often encountered during the framing process.

BRIEF SUMMARY OF THE INVENTION

Briefly described, in a preferred embodiment, the present invention overcomes the above-mentioned disadvantages and meets the recognized need for such a device by providing a tool for measuring linear distances, wherein the present invention facilitates the process of laying out framing and trim components in view of conventional methods requiring a tape measurer or ruler.

According to its major aspects and broadly stated, the present invention in its preferred form is a measuring apparatus and method comprising a housing and measuring wheel. More specifically, the measuring wheel comprises incremental line markers disposed along the outer edge thereof, wherein distance-demarcating numerals are preferably located at one-inch intervals along the circumference of the wheel.

The housing preferably functions as a straight edge and gauging block, wherein the housing and its component parts are dimensioned and configured to correspond to the sizes and angles most often encountered during framing. The housing also comprises measuring notches disposed on the outer edges thereof, preferably for measuring smaller distances.

The housing preferably encases the measuring wheel, wherein a portion or edge of the wheel is exposed to allow for measuring and marking a selected distance. To operate the tool, the measuring wheel is preferably rolled along a surface requiring measurement, wherein a user is able to

mark the surface at desired increments measured by the incremental line markers on the wheel.

Accordingly, features and advantages of the present invention are its accuracy, convenience, speed and ease of use.

Another feature and advantage of the present invention are the sidewalls of the housing, preferably dimensioned and configured to correspond to the sizes and angles most often encountered during framing, thereby allowing the housing to function as a straight edge and/or gauging block.

Still another feature and advantage of the present invention is that the measuring notches on the housing permit the user to easily measure small distances.

Yet another feature and advantage of the present invention is its ability to measure large distances, and thus replace spring-loaded flexible measuring tapes, thereby avoiding the above-described disadvantages associated with the utilization thereof.

Still yet another feature and advantage of the present invention is its ability to measure large distances, and thus replace calibrated sticks, thereby avoiding the above-described disadvantages associated with the utilization thereof.

A further feature and advantage of the present invention is its light-weight and compact size, thereby allowing a user to conveniently retain the tool on a belt or nail apron.

Still a further feature and advantage of the present invention is its ability to be utilized on practically any surface, regardless of the shape or size thereof.

These and other features and advantages of the present invention will become more apparent to one skilled in the art from the following description and claims when read in light of the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be better understood by reading the Detailed Description of the Preferred and Selected Alternate Embodiments with reference to the accompanying drawing figures, in which like reference numerals denote similar structure and refer to like elements throughout, and in which:

FIG. 1 is a front perspective view of a preferred embodiment of the present invention with demarcating numerals and markings removed for clarity;

FIG. 2 is an exploded view of a preferred embodiment of the present invention with demarcating numerals and markings removed for clarity;

FIG. 3 is a front view of a preferred embodiment of the present invention, showing markings thereon;

FIG. 4 is a rear view of a preferred embodiment of the present invention, showing markings thereon;

FIG. 5 is a front view of a wheel with incremental line markers and demarcating numerals;

FIG. 6 is a rear view of a wheel with incremental line markers and demarcating numerals;

FIG. 7 is a cross-sectional view of a preferred embodiment of the present invention;

FIG. 8 is a top view of an alternate embodiment of the present invention;

FIG. 9 is a side view of an alternate embodiment of the present invention;

FIG. 10 is a partial view of an alternate embodiment of the present invention;

FIG. 11 is a partial view of an alternate embodiment of the present invention; and

FIG. 12 is a view of a first wall of an alternate embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED AND SELECTED ALTERNATIVE EMBODIMENTS

In describing the preferred and selected alternate embodiments of the present invention, as illustrated in **FIGS. 1-12**, specific terminology is employed for the sake of clarity. The invention, however, is not intended to be limited to the specific terminology so selected, and it is to be understood that each specific element includes all technical equivalents that operate in a similar manner to accomplish similar functions.

Referring now to **FIGS. 1-4**, the present invention in a preferred embodiment is a tool or measuring apparatus **10** for measuring linear distances, wherein tool **10** generally comprises wheel **20** and housing **70**. More specifically, wheel **20** is preferably substantially flat and disk-shaped, and preferably formed from a suitable plastic. Wheel **20** generally preferably comprises first side **30**, second side **40**, peripheral wall **50** and axle throughhole **60**. It is recognized that wheel **20** could alternatively be formed from other suitable materials, such as, for exemplary purposes only, ceramic, metal, wood and/or other strong, rigid

materials. It is further recognized that wheel **20** could possess a rubber coating disposed around peripheral wall **50** to prevent wear to wheel **20**, and/or to prevent slippage from and/or damage to the surface to be measured.

Referring now to **FIGS. 5-6**, first side **30** and second side **40** of wheel **20** are preferably solid circular plates; however, it is contemplated in an alternate embodiment that wheel **20** could comprise spokes connecting a central hub to a peripheral wall. Axle throughhole **60** is preferably centrally formed through wheel **20**, wherein axle throughhole **60** is preferably dimensioned to receive an axle, as more fully described below. Peripheral wall **50** is preferably a grooved, non-slip surface having a predetermined circumference that corresponds to a standard linear distance commonly encountered in the building industry, wherein such standard linear distances may include, without limitation, sixteen inches, nineteen and two-tenths inches and/or twenty-four inches. Specifically, peripheral wall **50** preferably comprises a circumference of sixteen inches; however, it is recognized that peripheral wall **50** could comprise a circumference that is greater or less than sixteen inches.

Preferably, outer edges **32** and **42** of first side **30** and second side **40**, respectively, and peripheral wall **50** possess a plurality of incremental line markers for measuring linear distances along a selected surface. More specifically, outer edges **32** and **42**, and peripheral wall **50**, preferably comprise incremental line markers **34**, **44** and **54**, respectively, wherein incremental line markers **34**, **44** and **54** are preferably spaced 1/8 of an inch from each other, respectively. Outer edges **32** and **42** of wheel **20** also preferably comprise graduated inch-demarcating numerals **36** and **46**, respectively, preferably positioned at each one-inch interval. Wheel **20** further preferably comprises sixteen demarcating numerals **36** and **46**, respectively, wherein the demarcating numerals that embody the number "16" are preferably enclosed by triangles **38** and **48**, respectively.

Preferably, first side **30** and second side **40** of wheel **20** comprise secondary inch-demarcating numerals **37** and **47**, respectively, and tertiary inch-demarcating numerals **39** and **49**, respectively. Secondary inch-demarcating numerals **37** and **47** preferably indicate the distance measured after a

second revolution of wheel **20**, as more fully described below; and, tertiary inch-demarcating numerals **39** and **49** preferably indicate the distance measured after a third revolution of wheel **20**, also as more fully described below. It is contemplated in an alternate embodiment that wheel **20** could comprise any number, layout and/or form of markers and/or demarcating numerals, so long as tool **10** is capable of measuring selected distances.

Referring back to **FIGS. 1-4**, wheel **20** is preferably retained within housing **70**, wherein housing **70** preferably generally comprises first side **72**, second side **74**, first wall **76**, second wall **78**, third wall **80**, fourth wall **82**, fifth wall **84**, and inner cavity **86**. Housing **70** is preferably formed from aluminum; however, it is recognized that housing **70** could alternatively be formed from stainless steel, plastic, wood, and/or other suitable, strong, rigid materials.

Preferably, first side **72** and second side **74** of housing **70** are substantially P-shaped, wherein first side **72** and second side **74** preferably comprise raised peripheral edges **230** and **240**, respectively. Preferably, first side **72**

is parallel to second side **74**, wherein first side **72** is connected to second side **74** by first wall **76**, second wall **78**, third wall **80**, fourth wall **82**, and fifth wall **84**. Additionally, first side **72** and second side **74** are preferably each positioned at ninety-degree angles from first wall **76**, second wall **78**, third wall **80**, fourth wall **82**, and fifth wall **84**. Preferably, first wall **76** is adjacent to second wall **78** and disposed at a ninety-degree angle therefrom. Second wall **78** is preferably adjacent to third wall **80** and disposed at a ninety-degree angle therefrom. Third wall **80** is preferably adjacent to fourth wall **82** and disposed at a forty-five-degree angle therefrom. Fourth wall **82** is preferably adjacent to fifth wall **84** and disposed at a forty-five-degree angle therefrom. Corners **81**, **83**, **85** and **87** are preferably formed between first wall **76** and second wall **78**, second wall **78** and third wall **80**, third wall **80** and fourth wall **82**, and fourth wall **82** and fifth wall **84**, respectively, wherein corners **81**, **83**, **85** and **87** are preferably utilized to measure ninety and forty-five degree angles, as more fully described below.

Preferably, first wall **76**, second wall **78**, third wall **80**, fourth wall **82**, and fifth wall **84** are permanently affixed to second side **74**. Preferably, housing **70** further comprises securing blocks **220**, **222**, **224** and **226**, wherein securing block **220** is situated between the intersection of first wall **76** and second wall **78**; securing block **222** is situated between the intersection of second wall **78** and third wall **80**; securing block **224** is situated between the intersection of third wall **80** and fourth wall **82**; and, securing block **226** is situated proximate to fifth wall **84**. Securing blocks **220**, **222**, **224** and **226** preferably possess screw holes **221**, wherein second wall **78** preferably possesses screw holes **223** to removably secure first wall **76** to second wall **78** via screws, as illustrated in **FIG. 2**.

Housing **70** further preferably functions as a straight edge and/or gauging block, wherein housing **70** and its component parts are preferably dimensioned and configured to correspond to the sizes and angles most often encountered during framing. More specifically, first wall **76** is preferably 1 1/2 inches long, second wall **78** is preferably 5 1/2 inches long, third wall **80** is preferably 3 1/2 inches long, fourth wall **82** is preferably 3 inches

long, and fifth wall **84** is preferably 1 1/2 inches long, thereby facilitating measurement of conventional framing sizes and lengths.

First side **72** and second side **74** of housing **70** further preferably comprise markings **90**, **92**, **94**, **96**, **98**, **100** and **102**, and markings **110**, **112**, **114**, **116**, **118**, **120** and **122**, respectively, for demarcating the lengths and angles most often encountered during framing. Preferably, markings **90**, **92**, **94**, **96**, **98**, **100**, **102**, **110**, **112**, **114**, **116**, **118**, **120** and **122** are generally triangular-shaped. Preferably, markings **90** and **110** are disposed proximate to first wall **76**, markings **92** and **112** are disposed proximate to second wall **78**, markings **96** and **116** are disposed proximate to third wall **80**, markings **98** and **118** are disposed proximate to fourth wall **82**, and markings **102** and **122** are disposed proximate to fifth wall **84**. Preferably, markings **90**, **92**, **96**, **98**, **102**, **110**, **114**, **116**, **118** and **122** comprise numeric figures to indicate the length of the adjacent wall. Preferably, markings **100** and **120** are disposed proximate to corner **87**, wherein markings **100** and **120** possess numeric figures to indicate a forty-five degree angle.

First side **72** and second side **74** of housing **70** also preferably comprise first edges **130** and **140**, respectively, second edges **132** and **142**, respectively, third edges **134** and **144**, respectively, fourth edges **136** and **146**, respectively, and fifth edges **138** and **148**, respectively. First edges **130** and **140** are preferably disposed proximate to first wall **76**, second edges **132** and **142** are preferably disposed proximate to second wall **78**, third edges **134** and **144** are preferably disposed proximate to third wall **80**, fourth edges **136** and **146** are preferably disposed proximate to fourth wall **82**, and fifth edges **138** and **148** are disposed proximate to fifth wall **84**. Preferably, first wall **76**, second wall **78**, fourth wall **82**, fifth wall **84**, and edges **130**, **132**, **134**, **136**, **138**, **140**, **142**, **144**, **146** and **148** possess a plurality of measuring notches **150**, wherein measuring notches **150** are preferably positioned at one-inch intervals, and wherein measuring notches **150** are preferably provided to measure smaller distances. It is contemplated that housing **70** could comprise any number, configuration, and/or form of markings and notches, so long as the edges and/or walls of housing **70** can preferably be utilized as a measuring device.

First side **72** and second side **74** of housing **70** further preferably comprise plumb lines **152** and **153**, respectively, and roof pitches **154** and **155**, respectively, wherein plumb lines **152** and **153**, and roof pitches **154** and **155**, are preferably situated proximate second wall **78**. Plumb lines **152** and **153** are preferably markings utilized to level tool **10** on a workpiece, wherein roof pitches **154** and **155** are preferably markings utilized to frame rafters and similar building components.

First side **72** and second side **74** of housing **70** further preferably comprise apertures **160** and **170**, respectively, and windows **180** and **190**, respectively. Apertures **160** and **170** are preferably circular-shaped and preferably centrally disposed on first side **72** and second side **74**, respectively, to permit an axle to rotatably mount wheel **20** within inner cavity **86** of housing **70**, as more fully described below. Preferably, windows **180** and **190** are formed proximate to apertures **160** and **170**, respectively, wherein windows **180** and **190** are generally semi-circular shaped.

Housing **70** further preferably comprises lip **200**, wherein lip **200** is preferably attached to third wall **80** to

permit squaring of tool **10** onto a workpiece, such as a piece of lumber. Lip **200** preferably comprises nail hole **202** and string groove **203** for retaining plumb construction lines therewithin. Lip **200** and third wall **80** preferably comprise threaded screw holes **204** for mounting lip **200** to tool **10**; however, it is contemplated in an alternate embodiment that other suitable fasteners could be utilized, such as, for exemplary purposes only, rivets, bolts, glue, cement, soder, welding, or the like. Moreover, it is contemplated that tool **10** could possess any number, configuration and/or form of lips **200**.

As illustrated in **FIG. 7**, wheel **20** is preferably rotatably mounted within inner cavity **86** of housing **70**. Preferably, axle **210** is inserted into aperture **160**, wherein axle **210** passes through washer **212**, throughhole **60**, washer **214**, and out of aperture **170**. Preferably, axle **210** comprises head **216** and cylindrical portion **218**, wherein cylindrical portion **218** comprises threaded channel **211** for removably securing threaded bolt **213** therewithin. Threaded bolt **213** preferably secures axle **210** between first side **72** and second side **74** of housing **70**, thereby rotatably mounting wheel **20** therewithin. It is contemplated in an

alternate embodiment that other suitable fasteners could be utilized to rotatably mounted wheel **20** within housing **70**, such as, for exemplary purposes only, rivets, bolts, dowels, pegs, bearing systems or the like.

A feature of the present invention is its unique combination and configuration of components that permit quick and easy measurement of linear distances along a selected workpiece, thereby expeditiously facilitating the process of laying out framing and trim components, especially in view of conventional utilization and application of a tape measurer or ruler. To operate tool **10**, peripheral wall **50** of wheel **20** is preferably placed on a surface requiring measurement, wherein first side **72** and second side **74** of wheel **20** are preferably perpendicularly-oriented to the surface, and wherein triangles **38** and **48** of wheel **20** are preferably positioned proximate to the surface. Preferably, triangles **38** and **48** function as a starting reference point, so that when wheel **20** is rolled along the surface, the number of inches traveled from the starting point is indicated by demarcating numerals **36**, **37**, **39**, **46**, **47**, or **49** on wheel **20**. Preferably, tool **10** allows a user to quickly and easily measure selected distances

along a surface, wherein the user is able to easily mark the surface at selected intervals with a pen, pencil or marker, and wherein sixteen-inch increments are clearly indicated by triangles **38** and **48** to facilitate marking the surface at sixteen-inch intervals.

In addition to retaining wheel **20**, housing **70** also preferably functions as a straight edge and/or gauging block, wherein housing **70** and its component parts are preferably dimensioned and configured to correspond to the sizes and angles most often encountered during framing. For example, the corners of housing **70** preferably permit a user to layout studs and/or other framing components at ninety and/or forty-five degree angles. Furthermore, first wall **76**, second wall **78**, third wall **80**, fourth wall **82**, and fifth wall **84** of housing **70** can be placed on a surface to measure dimensions commonly encountered during framing, such as, for exemplary purposes only, 1 1/2 inches (edge of 2x board), 3 inches (edge of double 2x boards), 3 1/2 inches (2x4 stud) and 5 1/2 inches (2x6 stud). First wall **76**, second wall **78**, fourth wall **82**, fifth wall **84** and lip **200** of housing **70** also preferably possess measuring notches **150** for measuring smaller distances in 1/2-inch intervals.

Referring now more specifically to **FIGS. 8-12**, illustrated therein is an alternate embodiment of tool **10**, wherein the alternate embodiment of **FIGS. 8-12** is substantially equivalent in form and function to that of the preferred embodiment detailed and illustrated in **FIGS. 1-7** except as hereinafter specifically referenced. Specifically, the embodiment of **FIGS. 8-12** comprises 1-inch markers **250**, 1/4-inch markers **252**, 1/8-inch markers **254**, distance demarcating numerals **256**, and roof pitch markers **258** to facilitate measurement of conventional framing sizes and lengths.

In another alternate embodiment, housing **70** could embody other suitable shapes and/or sizes, provided that housing **70** is preferably dimensioned and configured to measure sizes and angles commonly encountered during framing. In such an embodiment, wheel **20** is capable of freely rotating within housing **70**, wherein peripheral wall **50** of wheel **20** is able to contact a surface requiring measurement.

In still another alternate embodiment, first side **72** and second side **74** of housing **70** could comprise triangular cutouts for measuring forty-five-degree angles, wherein the cutouts could be isosceles triangles having two forty-five degree angles each. The cutouts could be disposed proximate to corner **83**, in such a manner so as to not be obscured by wheel **20**.

In yet another alternate embodiment, tool **10** could comprise measuring notches, incremental line markers and demarcating numerals positioned at alternatively suitable increments, such as, for exemplary purposes only, every 1/8 inch, 1/4 inch, 1/2 inch, every inch and/or at any other increments in accord with industry standard and/or changes to industry standard.

In still yet another alternate embodiment, each side of wheel **20** could comprise two sets of incremental line markers and demarcating numerals, wherein an outer set of incremental line markers and demarcating numerals could define a scale for measuring distances in inches, and wherein an inner set of incremental line markers and

demarcating numerals could define a scale for measuring distances in centimeters.

In further another alternate embodiment, tool **10** could comprise and be configured to retain a wheel having a twelve-inch circumference, nineteen and two-tenths-inch circumference, twenty-four-inch circumference, or any other circumference in accord with industry standard and/or changes in industry standard.

In still a further alternate embodiment, tool **10** could comprise and be configured to retain interchangeable wheels having varying circumferences.

In yet a further alternate embodiment, wheel **20** could comprise one or more built-in marking utensils or instruments to mark a surface at selected intervals.

In still yet a further alternate embodiment, housing **70** could possess a clip to retain tool **10** on a user's tool belt.

In another alternate embodiment, housing **70** could possess a retractable measuring tape.

In yet another alternate embodiment, housing **70** could possess a light source to illuminate a work surface in dark locations.

In still another alternate embodiment, housing **70** could possess a stud finder.

In still yet a another alternate embodiment, housing **70** could possess a leveler or a laser-guided alignment device.

Having thus described exemplary embodiments of the present invention, it should be noted by those skilled in the art that the within disclosures are exemplary only, and that various other alternatives, adaptations, and modifications may be made within the scope of the present invention. Accordingly, the present invention is not limited to the specific embodiments illustrated herein, but is limited only by the following claims.